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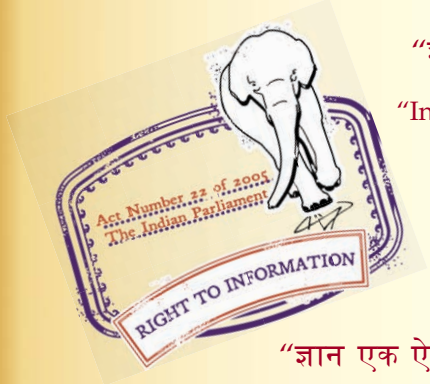

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SPECIFICATION FOR NATURAL MOULDING SAND FOR USE IN FOUNDRIES

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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SPECIFICATION FOR NATURAL MOULDING SAND FOR USE IN FOUNDRIES

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(*Continued on page* 6)

Indian Standard

SPECIFICATION FOR NATURAL MOULDING SAND FOR USE IN FOUNDRIES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 11 October 1965, after the draft finalized by the Foundry Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Natural moulding sand contains variable amount of clay which acts as bond between the sand grains. It occurs as loose or as consolidated deposit of sedimentary origin. The mineralogical constituents of the clay may belong to the kaolinite group like dickite, kaolinite, nacrite, halloysite and montmorillonite, or to the secondary mica group; each group has its own characteristic properties. Natural moulding sand, therefore, possesses strength, plasticity and refractoriness to varying extent depending upon the clay minerals present.

0.3 Natural moulding sand may be used as such for a variety of purposes in foundries. But when it contains a greater amount of clay, it is blended with river sand, dune sand or any other variety of sand which is relatively clay-free so as to get the optimum properties desired in the sand mixture.

0.4 No marking clause has been included in this standard as natural moulding sand is supplied loose.

0.5 This standard contains a clause on green compressive strength requirement of natural moulding sand (*see* **9**) which requires the purchaser to specify it, if necessary, while placing an order.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for natural moulding sand for use in foundries.

*Rules for rounding off numerical values (*revised*).

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of natural moulding sand for use in foundries shall be as laid down in IS : 1387-1959*.

2.2 As far as possible, the sand shall be free from gravel.

3. SAMPLING

3.1 Representative samples shall be drawn according to the scheme of sampling given in IS : 1811-1961†.

4. GRADES

4.1 Natural moulding sand for use in foundries shall be of three main grades, namely, Grades A, B and C with respect to clay content. Each main grade shall be of 11 sub-grades, namely, Grades 850/425, 600/300, 425/212, 300/150, 212/106,150/75, 850/300, 600/212, 425/150, 300/106 and 212/75 based on the distribution of sand grains. The grade of natural moulding sand shall be designated with a symbol which shall be a combination of gradation according to clay content and grain size distribution. For example, natural moulding sand falling under Grade A with respect to clay content and Grade 850/425 according to its grain size distribution shall be designated as Grade A 850/425.

5. CLAY CONTENT

5.1 The clay content of different grades of natural moulding sand, when determined in accordance with IS : 1918‡, shall be as given in Table 1.

TABLE 1 CLAY CONTENT OF NATURAL MOULDING SAND

GRADE	CLAY, PERCENT
A	5 to 10
B	10 „ 15
C	15 „ 20

6. REFRACTORINESS

6.1 When tested in accordance with the method given in IS : 1918‡, the refractoriness of different grades of natural moulding sand shall be as

*General requirements for the supply of metals and metal products.

†Methods of sampling foundry sands.

‡Methods of physical tests for foundry sands (*under preparation*).

given below:

Grade	*'A' Sintering Temperature Range*
A	1350° to 1450°C
B	1200° ,, 1350°C
C	1100° ,, 1200°C

7. GRAIN SHAPE

7.1 When tested in accordance with the method given in IS : 1918*, washed sand grains shall be mostly of sub-angular to round shape.

8. GRAIN FINENESS

8.1 The different grades of natural moulding sand, when tested in accordance with the method given in IS : 1918*, shall have the grain fineness as given in Table 2.

TABLE 2 GRAIN FINENESS OF NATURAL MOULDING SAND

GRADE	FRACTION RETAINED	
	*On IS Sieve Designation (Micron)	Percent, *Min*
850/425	850, 600 and 425	60
600/300	600, 425 and 300	60
425/212	425, 300 and 212	60
300/150	300, 212 and 150	60
212/106	212, 150 and 106	60
150/75	150, 106 and 75	60
850/300	850, 600, 425 and 300	60
600/212	600, 425, 300 and 212	60
425/150	425, 300, 212 and 150	60
300/106	300, 212, 150 and 106	60
212/75	212, 150, 106 and 75	60

**see* IS : 460-1962 Specification for test sieves (*revised*).

NOTE — When IS Sieves are not available, equivalent BS or ASTM Sieves specified in Appendix A may be used. The BS and ASTM sieves listed in Appendix A have their apertures within the limits specified for the corresponding IS sieves.

*Methods of physical tests for foundry sands (*under preparation*).

9. GREEN COMPRESSIVE STRENGTH

9.1 Where required, the green compressive strength and the method of its determination shall be specified by the purchaser.

APPENDIX A

(Note in Table 2)

COMPARATIVE SIEVE DESIGNATIONS OF IS, BS AND ASTM SIEVES

IS Sieve	BS Sieve	US Standard Sieve (ASTM Sieve)
850-micron	18	841 μ (20)
600-micron	25	595 μ (30)
425-micron	36	420 μ (40)
300-micron	52	297 μ (50)
212-micron	72	210 μ (70)
150-micron	100	149 μ (100)
106-micron	150	105 μ (140)
75-micron	200	74 μ (200)

(*Continued from page 2*)

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53/5 Ward No.29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-56C, L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C-Scheme, JAIPUR 302001	37 29 25
117/418 B, Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
NIT BUilding, Second Floor, Gokulpat Market, NAGPUR 440010	52 51 71
Patliputra Industrial Estate, PATNA 800013	26 23 05
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